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टाइपराइटर के लिए पीछे से लेपित  
कार्बन पेपर — विशिष्टि

( पहला पुनरीक्षण )

Back Coated Carbon Papers for  
Typewriter — Specification

( First Revision )

ICS 85.080

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## FOREWORD

This Indian Standard (First Revision) was adopted by the Bureau of Indian Standards, after the draft finalized by the Printing Inks, Stationery and Allied Product Sectional Committee had been approved by the Chemical Division Council.

This Indian Standard was first published in 1976. The first revision of this standard covers the requirements and the methods of sampling and test for back coated carbon papers, black or blue in colour, for use with typewriter.

Besides the carbon coating on one side of carbon papers an additional coating of wax or other suitable material is given on the back side to impart letter appearance, performance and durability of the material. Since there is sufficient demand for such type of back coated carbon papers, the Sectional Committee decided to formulate an Indian Standard on the subject.

The specification for single side coated carbon paper for typewriter is covered under a separate Indian Standard, namely, IS 1551 'Carbon papers for typewriter — Specification (*second revision*)'.

This standard contains clause 5.4 which calls for agreement between the purchaser and the supplier.

This standard is being revised to incorporate the revised value of substance of base paper, durability in Grade 3 and modified the test method for 'Determination of substance of base paper, mass of coating, and back side staining and printing'.

The composition of the Committee responsible for the formulation of this Standard is given at Annex E.

For the purpose of deciding whether a particular requirement of this standard is complied with the final value, observed or calculated, expressing the result of a test or analysis shall be rounded off in accordance with IS 2 : 1960 'Rules for rounding off numerical values (*revised*)'. The number of significant places retained in the rounded off value should be the same as that of the specified value in this standard.

# *Indian Standard*

## BACK COATED CARBON PAPERS FOR TYPEWRITER — SPECIFICATION

( *First Revision* )

### 1 SCOPE

This standard prescribes the requirements and the methods of sampling and test for back coated carbon papers, black or blue in colour for use with typewriter.

### 2 REFERENCES

The following Indian standard contains provisions which through reference in this text, constitute provisions of this standard. At the time of publication, the editions indicated were valid. All standards are subject to revision, and parties to agreements based on this standard are encouraged to investigate the possibility of applying the most recent edition of the standard indicated below:

<i>IS No.</i>	<i>Title</i>
170 : 2004	Acetone ( <i>fourth revision</i> )
718 : 1977	Carbon tetrachloride ( <i>second revision</i> )
1551 : 1991	Carbon papers for typewriter — Specification ( <i>second revision</i> )
1848 : 2007	Writing and printing paper ( <i>third revision</i> )
3413 : 1978	Cotton twine — Specification ( <i>first revision</i> )
4174 : 1977	Typewriter ribbons, cotton — Specification ( <i>first revision</i> )
4395 : 1987	Glossary of terms relating to inks and allied industry
4905 : 2015/ ISO 24153 : 2009	Random sampling and randomization procedures ( <i>first revision</i> )

### 3 TERMINOLOGY

For the purpose of this standard, the definitions given in IS 4395 shall apply.

### 4 GRADES

There shall be three grades of back coated carbon papers, namely:

- a) Grade 1 — Light weight,
- b) Grade 2 — Medium weight, and
- c) Grade 3 — Standard weight.

### 5 REQUIREMENTS

#### 5.1 Description

The material shall consist of tissue paper coated on one side with suitable carbon ink necessary to give the required copying results, and coated with suitable wax/waxes/resins on the other side to produce an evenly coated wax backed carbon paper.

#### 5.2 Carbon Work

Light shall not have any appreciable effect on the typed carbon work. There shall be a gradual, not abrupt, loss of distinctness of the carbon copies when repeatedly typed at the same place.

#### 5.3 Base Paper

The base paper used in the manufacture of the material (or when decoated) shall be carbonizing tissue conforming to Type 1 of IS 3413 in case of Grade 1 and Grade 2 of the material, and conforming to Type 2 in case of Grade 3 of the material.

#### 5.4 Size

The size of carbon papers shall be as agreed to between the purchaser and the supplier. The tolerance allowed on the size shall be  $\pm 1.5$  mm in each direction.

#### 5.5 Resistance to Curling

The material shall comply with the requirement of the test for resistance to curling as prescribed in Annex A.

5.6 The material shall also comply with the requirements given in Table 1, when tested by the methods prescribed in the appendices. Reference to the appropriate appendices is given in col 6 of the table.

### 6 KEEPING QUALITY

The material shall continue to satisfy all the requirements prescribed in the standard and also remain free from fungal growth for a period of at least one year from the date of packing.

### 7 PACKING AND MARKING

#### 7.1 Packing

Unless otherwise agreed to between the purchaser and the supplier, 25 or 100 sheets shall be packed in

a packet which may 'be either a folder or a cardboard box'. When more than 25 sheets are packed in a packet, a demarcation sheets of a distinctive colour of the size of carbon papers shall be included after each 25 sheets.

## 7.2 Marking

7.2.1 Each packet shall be marked with the following information:

- Name and colour of the material;
- Grade and size of the material;
- Month and year of packing;
- Name of the manufacturer and/or his recognized trade-mark, if any; and
- Identification in code or otherwise to enable the lot of manufacture to be traced back from records.

## 7.2.2 BIS Certification Marking

The sheet and packet may also be marked with the BIS Standard Mark.

7.2.2.1 The use of the Standard Mark is governed by the provisions of the *Bureau of Indian Standards Act, 2016* and Rules and Regulations made thereunder. The details of the conditions under which the licence for use of the Standard Mark may be granted to manufacturers or producers may be obtained from the Bureau of Indian Standards

## 8 SAMPLING

The method of drawing representative samples of the material and the criteria for finding out the conformity of the material to the requirements of this specification shall be as prescribed in Annex D.

**Table 1 Requirements for Back Coated Carbon Papers for Typewriter**  
( Clause 5.6 )

Sl No.	Characteristics	Requirements for			Method of Test (Ref to Annex)
		Grade 1	Grade 2	Grade 3	
(1)	(2)	(3)	(4)	(5)	(6)
i)	Substance of base paper, g/m <sup>2</sup>	11.5 ± 1.0	14.5 ± 1.0	20.5 ± 1.5	B
ii)	Coating:			12.0 ± 1.5	
	a) Transfer coating, g/m <sup>2</sup>	10.0 ± 1.0	11.0 ± 1.0	-1.0	B
	b) Back coating, g/m <sup>2</sup> , <i>Min</i>	3.0	3.0	3.0	B
iii)	Durability (minimum number of impressions at the same spot)	10	11	8	C
iv)	Manifolding (minimum number of copies)	8	6	5	C

## ANNEX A

( Clause 5.5 )

## TEST FOR CURLING

## A-1 PROCEDURE

**A-1.1** Place two sheets on a wire screen, carbon-coated side down, in a conditioning room in which relative humidity of  $65 \pm 2$  percent and temperature of  $27 \pm 1^\circ\text{C}$  are maintained. After the sheets have been conditioned for one hour, remove the sheets from the screen and place on

a flat glass surface, carbon-coated side up. After one minute, measure the portions of the two narrow sides of each sheet which are in direct contact with the flat surface.

**A-1.2** The material shall be considered satisfactory if not less than 80 percent of the sum of the total lengths of the narrow sides are in contact with the flat surface.

## ANNEX B

[ Table 1, Sl. No. (i) and (ii) ]

## DETERMINATION OF SUBSTANCE OF BASE PAPER, MASS OF COATING, AND BACK SIDE STAINING AND PRINTING

## B-1 TEST PIECE

Condition a sheet of carbon paper as prescribed in **B-2.2.1** and cut out a test piece measuring 10.0 cm  $\times$  10.0 cm.

## B-2 DECOATING

Coating analysis for carbon paper having back staining and printing.

(To determine substance of base paper, carbon coating and staining cum printing of the carbon paper)

## B-2.1 Reagents

## B-2.1.1 Petroleum Ether (100/120)

## B-2.1.2 Rectified Spirit

## B-2.2 Procedure

Cut 10.0  $\times$  10.0 cm of carbon paper. Weigh it accurately [ $m_1$ , GSM ( $M_1$ ) =  $100 \times m_1$ ]. Take a suitable quantity of Petroleum Ether (100/120) in the beaker. Heat the above beaker containing petroleum ether (100/120) to boil on sand bath or heating mantle. Wet a wad of surgical grade of cotton wool with petroleum ether (100/120), squeeze gently and by rubbing, remove carbon coating of the test specimen which is kept on bunch of papers with carbon coated side facing upwards. Repeat with fresh wad of cotton wool, until maximum carbon coating is removed. Add rectified spirit to the above beaker containing petroleum ether (100/120) to make about 1:1 mixture. Heat the mixture to near boiling. Wet a fresh wad of cotton wool with the mixture, squeeze gently and by rubbing, remove complete coating of the test specimen.

Allow the test piece to dry and weigh it accurately [ $m_2$ , GSM:  $M_2 = 100 \times m_2$ ]. Again take fresh 1:1 mixture of petroleum ether (100/120) and rectified spirit (or same aforesaid mixture in the beaker), bring it to boil. Immerse the test piece (transfer side de-coated) into the boiling solvent until tissue is cleaned. Repeat the operation with fresh quantity of solvents, if required. Allow the test piece to dry and condition it (see **B-2.2.1**), and weigh it accurately [ $m_3$ , GSM:  $M_3 = 100 \times m_3$ ].

NOTE — Petroleum ether is highly flammable, no heating over any flame.

## B-2.2.1 Conditioning

Suspend the test piece in a conditioning chamber in which relative humidity of  $65 \pm 2$  percent and temperature of  $27 \pm 1^\circ\text{C}$  are maintained (temperature should not vary by more than  $\pm 1^\circ\text{C}$  in a given series of tests) in such a way that conditioning atmosphere has free access to all its surfaces. The test piece shall be demand to have reached equilibrium when the results of two consecutive weightings at an interval of one hour do not differ by more than 0.4 percent of the total mass.

## B-3 CALCULATION

Substance of base paper,  $g/m_2 = M_3$

Carbon coating,  $g/m_2 = M_1 - M_2$

Coating for staining and printing,  $g/m_2 = M_2 - M_3$

where,

$M_1$  = Mass in g, of the test piece after decoating;

$M_2$  = Mass in g, of the test piece after drying; and

$M_3$  = Mass in g, of the test piece after conditioning.

## ANNEX C

[ Table 1, *Sl. No.* (iii) and (iv) ]

## TEST FOR DURABILITY AND MANIFOLDING

## C-1 TESTING APPARATUS

The tests described shall be made on any suitable machine, meant for testing carbon papers and typewriter ribbons, with freshly cleaned pica type. A No. 1 platen and typewriter ribbon (*see* IS 4174) shall be used.

NOTE — 'Prufako' Model VI manufactured by Karl Kracke, Honnover ( Germany ) is one of the suitable machines for this test. If this machine is used, resistance, speed and stroke shall be kept at 80, 70 and 70 respectively and the drum pressure device set in position 1.

## C-2 TEST FOR DURABILITY

Ordinary typing paper of substance 40 g/m<sup>2</sup> (*see* IS 1848 ) shall be used for the test. A piece of about 4 to 5 cm of the carbon paper to be tested shall be securely fastened to the first sheet so that the coated side of the sample comes in contact with the copy sheet in the usual way. After the two sheets of paper have been placed in the testing machine, the first sheet carrying the carbon paper shall be securely fastened to the back of the carriage in any suitable way so that the former will not move while the platen is turned for

spacing lines. The platen shall be turned slightly to pull the first sheet taut. Then a line of suitable letters shall be written exactly over the same spot of the carbon paper. The carbon paper shall make not fewer than the required number of carbon copies that are clean, legible and of good intensity. In examining the sheet, the operator shall not be misled by extra black edges of some letters that are indicative of a shifting of the first sheet with the attached sample or of a light play of the type bar.

## C-3 TEST FOR MANIFOLDING

Ordinary typing paper of substance 40 g/m<sup>2</sup> (*see* IS 1848) shall be used for this test. A convenient size of sheet for this test is 9 × 20 cm. A first sheet and copy sheets with sheets of carbon paper shall be assembled in the usual way. The assembled sheets shall be inserted in the machine and the entire keyboard, both upper and lower case, shall be written twice over in unrelated order. The last copy sheet shall be examined for legibility. None of the characters shall be illegible.

## ANNEX D

( Clause 8.1 )

SAMPLING OF BACK COATED CARBON PAPERS  
FOR TYPEWRITER

## D-1 GENERAL PRECAUTIONS

**D-1.1** Samples shall be drawn from original unopened packets.

**D-1.2** Samples shall be protected from abnormal exposure to heat and light, and shall not be allowed to come in contact with any liquid

**D-1.3** Samples shall be touched as little as possible, and contact with sweated hands shall be avoided.

**D-1.4** Samples shall not be folded before testing.

## D-2 SCALE OF SAMPLING

## D-2.1 Lot

All the packets in a single consignment of the same size, same grade and from the same batch of manufacture, shall constitute a lot.

**D-2.1.1** Samples shall be tested from each lot separately for ascertaining the conformity of the lot to the requirements of the specification.

**D-2.2** The number of packets to be selected from a lot for sampling shall depend upon the size of the lot and shall be in accordance with col 1 and 2 of Table 2.

**D-2.3** These packets shall be selected at random from the lot and in order to ensure randomness of selection, procedures given in IS 4905 shall be followed.

**D-2.4** From each of the packets selected under **D-2.3**, approximately equal number of sheets shall be taken so as to constitute the required sample size given in col 3 of Table 2.

**Table 2 Scale of Sampling and Permissible Number of Defectives**  
( Clause D-2.2 )

No. of Packets in the Lot	No. of Packets to be Selected	No. of Sheets in the Sample	Permissible No. of Defective Sheets
(1)	(2)	(3)	(4)
up to 15	3	5	0
16 to 25	6	8	0
26 to 100	10	13	0
101 to 300	15	20	1
301 to 500	20	32	2
501 and above	30	50	3

### **D-3 NUMBER OF TESTS AND CRITERIA FOR CONFORMITY**

**D-3.1** All the sheets selected according to col 2 and 3 of Table 2 shall be examined for requirements given in **5.1** to **5.6**. A sheet failing to meet any one or more of the requirements shall be considered as defective.

**D-3.2** A lot shall be declared as conforming to the requirements of this specification if the number of sheets found defective under **D-3.1** is less than or equal to the corresponding permissible number of defective sheets given in col 4 of Table 2

## ANNEX E

( Foreword )

## COMMITTEE COMPOSITION

<i>Organization</i>	<i>Representative(s)</i>
Govt Printing, Govt of West Bengal Government of Indian Stationery Office, Kolkata	SHRI SUBIR KUMAR MANDAL, ( <b>Chairman</b> ) CHD 14 SHRI BISHAMBER DHAR ( <i>Alternate</i> )
All India Federation of Master Printers, New Delhi	SHRI HARJINDER SINGH
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Security Printing & Minting Corpn India Ltd, Delhi (SPMCIL)	SHRI S. MAHAPATRA DR D. K. RATH ( <i>Alternate</i> )
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CONSUMER VOICE	SHRI MAU KHAN SHRI K. C. CHAUDHARY ( <i>Alternate</i> )



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*Member Secretary*

SHRI SAGAR SINGH  
SCIENTIST 'C' (CHD), BIS.





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